

Pressurized Vapor Cycle Liquid Distillation**Abstract**

Embodiments of the invention are directed toward a novel pressurized vapor cycle for
5 distilling liquids. In an embodiment of the invention, a liquid purification system is revealed,
including the elements of an input for receiving untreated liquid, a vaporizer coupled to the
input for transforming the liquid to vapor, a head chamber for collecting the vapor, a vapor
pump with an internal drive shaft and an eccentric rotor with a rotatable housing for
compressing vapor, a condenser in communication with the vapor pump for transforming the
10 compressed vapor into a distilled product, and an electric motor with motor rotor and
magnets hermetically sealed within the fluid pressure boundary of the distillation system.